Remarks

The above-referenced application has been reviewed in light of the Examiner's Office Action dated July 12, 2004. By the Office Action, Claims 1-14 stand rejected. Claims 1, 5, 10 and 12-13 have been amended; and new Claims 15-20 have been added. Accordingly, Claims 1-20 are currently pending in this application. The Examiner's reconsideration of the rejections in view of the above amendments and the following remarks is respectfully requested.

In accordance with the Office Action, Claims 1, 2 and 5-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,852,487 to Fujimori et al. (the '487 patent or Fujimori) in view of U.S. Patent No. 6,339,462 B1 to Kishimoto et al (the '462 patent or Kishimoto). Applicants' respectfully submit that amended Claims 1, 5, 10 and 12 are not rendered obvious by Fujimori in view of Kishimoto for at least the reasons set forth below.

Applicants' pending Claim 1 recites, *inter alia*, "A touch sensor type liquid crystal display comprising ... a plurality of **columnar** gap controlling spacers ... each of the spacers having **two** members ... wherein a cross-section of each spacer ... is no larger in area than either of said first and second contact surfaces". Thus, amended Claim 1 sets forth that the spacers are columnar, have two members, and that the cross-sectional area at the contact point between the spacer members is no larger than the contact area between either spacer member and its respective substrate.

The '487 patent to Fujimori et al. shows an LCD device with touch-sensor capability having a grid-like spacer 11 (*see* FIG. 2 of Fujimori). The Fujimori device has a number of separate liquid crystal regions 12 (*see* FIG. 1 of Fujimori) defined by the grid-like spacer 11. Such devices may exhibit disadvantages such as air pockets and/or increased labor requirements when injecting the separate regions with liquid crystal molecules. Thus, Fujimori is generally directed to a touch-sensing LCD, but fails to show columnar spacers, and particularly fails to teach or suggest spacers having two members.

The Examiner cites Kishimoto at FIGs. 10A through 10I for a showing of two-member spacers (O.A. at 4). As a preliminary issue, Applicants submit that Kishimoto's FIGs. 10A-10I do not apply to touch-sensing LCDs. Thus, any spacers of Kishimoto would not necessarily be usable in a touch-sensing type of LCD device, which is necessarily subjected to different stresses. Therefore, it would not have been obvious to one of ordinary skill in the pertinent art to apply the showings of a non-touch-sensing LCD, such as in FIGs. 10A-10I of Kishimoto.

In addition, it is respectfully submitted that Kishimoto only shows **single-**member spacers, since only Kishimoto's element 920 may be a column-like spacer, while the element 917 is actually just a portion (note hatching in FIG. 10B) of a polymer wall (*see, e.g.,* Kishimoto at col. 1, lines 63-65), which is **not columnar**.

Applicants' columnar gap controlling spacers may be arranged to compensate for design and/or usage considerations by disposing a greater number of spacers towards the center of the touch-pad, for example (*see* Application at p. 10, line 18 through p. 11, line 10), as set forth in dependent claims. Fujimori et al. neither teach nor suggest such features, and teach away from such dispositions of spacers by showing a single fixed grid-like spacer. Thus, the showings of Fujimori et al. are inapposite to Applicants' claimed feature of columnar spacers. Although Kishimoto may show single-member columnar spacers, the spacers of Kishimoto are restricted to placement on top of the polymer wall 917, and cannot be placed elsewhere as can the **two-member** spacers according to Applicants' amended Claim 1.

The '462 patent to Kishimoto et al. shows an LCD device without any provision for touch-sensor capability. Thus, Applicants' respectfully submit that the showings of Kishimoto et al. with respect to spacers for supporting the loads of touch-sensor usage would not be adopted by those of ordinary skill in the pertinent art for touch-sensor LCD devices. In addition, Kishimoto et al. show

spacers having a reduced contact area at an upper surface, and teach that shapes having a 45 degree angle with respect to the lattice wall are desirable (*see, e.g.,* col. 5, lines 28-36 of Kishimoto; FIG. 1, num. 20). Therefore, Kishimoto fails to overcome the deficiencies of Fujimori, at least with respect to columnar spacers having two members.

Applicants' present disclosure recognizes the advantages of increased surface-contact area at each end of the spacer (*see, e.g.,* p.7, l. 1-2 and l. 11-14; p. 9, l. 4-9; FIG. 12, 19a lower surface and 19b upper surface), and further recognizes the advantages of providing a necked-down interface between two spacer portions to enable the spacer to yield more in that region (*see, e.g.,* p. 7, l. 9-11 and l. 20-21; FIG. 12, interface between 19a and 19b) rather than at the spacer to substrate layer interface.

Therefore, it would not have been obvious to apply the showings of Kishimoto with respect to non-touch-sensing LCDs to those of Fujimori, and even if one did, it would not have resulted in the invention as presently claimed in Claim 1, which recites, *inter alia,* "A **touch sensor type** liquid crystal display comprising ... **columnar** gap controlling spacers ... each ... having **two members**". Amended Claims 1, 5, 10 and 12 recite similar limitations for two-member columnar spacers, which are neither taught nor suggested by Fujimori in view of Kishimoto. New Claims 19 and 20, which currently depend from amended Claim 1, are also brought to the Examiner's attention.

In accordance with the Office Action, Claims 13-14 stand rejected under 35 U.S.C. §103(a) as being obvious over Japanese Patent No. JP 2000-227596 to Yanagawa et al. ("Yanagawa") in view of in view of U.S. Patent No. 6,339,462 B1 to Kishimoto et al (the '462 patent or Kishimoto). Applicants' respectfully submit that amended Claims 13-14 are not rendered obvious by Yanagawa in view of Kishimoto for at least the reasons set forth below.

Amended Claim 13 recites, *inter alia,* "A liquid crystal display comprising ... gap controlling spacers ... having two members ..., the cross-section of each

spacer parallel to the plane of a substrate at said intermediate point being no larger in area than either of the substrate contact surfaces".

As discussed above with respect to Claim 1, the '462 patent to Kishimoto et al. shows an LCD device with only single-member spacers, and fails to teach or suggest columnar two-member spacers. Yanagawa also fails to show columnar two-member spacers. Accordingly, the '462 patent to Kishimoto et al. fails to overcome this and other deficiencies of Japanese Patent No. JP 2000-227596 to Yanagawa et al. New Claims 15-18, which currently depend from amended Claim 13, are also brought to the Examiner's attention.

Conclusion:

Accordingly, it is respectfully submitted that amended independent Claims 1, 5, 10 and 12-13 are in condition for allowance for at least the reasons stated above. Since Claims 2-4, 6-9, 11 and 14-20 each depend from one of the above claims and necessarily include each of the elements and limitations thereof, it is respectfully submitted that these claims are also in condition for allowance for at least the reasons stated, and for reciting additional patentable subject matter. Thus, each of Claims 1-20 is in condition for allowance. All issues raised by the Examiner having been addressed, reconsideration of the rejections and an early and favorable allowance of this case is earnestly solicited.

Respectfully submitted,

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